REMARKS

Preliminary Matters

The Examiner states that a complete reply to the final rejection must include cancellation of non-elected claims or other appropriate action. Applicant cancels claims 8-10, as these claims were not elected in the Response filed on August 8, 2003.

Applicant also thanks the Examiner for indicating that the corrected figures filed on December 22, 2003 are approved.

With respect to the Amendment filed on December 22, 2003, the Examiner objects to the amendments as allegedly adding material which is not supported by the original disclosure. Specifically, the Examiner alleges that the description of the variable a as corresponding to the "slip angle" is new matter. Applicant submits that one skilled in the art would recognize that the variable a corresponds to the "slip angle". That is, on page 18 of the original specification, equation 3 is described as the tire longitudinal-direction dynamic property state equation and it uses ? to correspond to a slip ratio, while equation 4 is described as the tire transverse-direction dynamic property state equation and equation 4 uses a in a similar way as the variable ? is used in equation 3. As set forth throughout the specification, slip ratio correlates to the longitudinal direction of the tire and slip angle correlates to the transverse direction of the tire, therefore since ? corresponds to the slip ratio, as set forth in equation 3 and described on page 19, one skilled in the art would recognize that a corresponds to the slip angle.

See also http://code.eng.buffalo.edu/dat/sites/tire/tire.html, which identifies "a" as corresponding to the "slip angle".

Accordingly, Applicant submits that a skilled person in this technical field obviously knows that the angle a employed in the equation 4 formulating the tire traverse-direction dynamic property state equation is denoted by the slip angle (also known as the "side slip angle").

Claim Rejections

Claims 1-7 are all the claims pending in the application, claims 8-10 having been canceled as indicated herein. Claims 3 and 7 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 3-7 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 1, 3, and 7 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Baun (DE 3610519). Finally, claims 4-6 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Baun.

§ 112, first paragraph, Rejections - Claims 3 and 7

Claims 3 and 7 are rejected under § 112, first paragraph (*written description)*, for the same reasons set forth in the previous Office Action. The Examiner also states in the *Response to Arguments* section of the present Office Action that Applicant "is obligated to provide a complete description of the manner in which the invention is embodied. In the instant case, applicant has failed to do so. The public can only speculate as to how the invention would be embodied." In response, Applicant submits that to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is

what is now claimed. *See MPEP 2163.02 (Standard for Determining Compliance with the Written Description Requirement).* In the present instance, as argued in the previous Amendment, Applicant submits that one skilled in the art would recognize that the specification, as originally filed, describes with reasonable clarity to one skilled in the art the claimed invention. That is, one skilled in the art would understand, for example, how vibration is applied in a load support or revolution direction. The MPEP does NOT require that each and every aspect of an invention be described such that one that is NOT skilled in the art can fully understand the invention.

Further, in response to the Examiner's statements that "no details are given concerning the construction of the actuator or its interconnection with the tire," Applicant submits that the construction of the actuator or its interconnection with the tire are not part of the invention, but are only ancillary matters. Further, such are known in the art; these matters are considered by those skilled in the art to be a matter of design. Applicant submits that one skilled in the art can make an actuator as well as the related interconnections according to a chosen design, and the information provided in the specification.

Therefore, at least based on the foregoing, Applicant respectfully requests that the § 112, first paragraph rejections be withdrawn.

§ 112, second paragraph, Rejections - Claims 1 and 3- 7

Claims 1 and 3-7 are rejected under § 112, second paragraph, for the reasons set forth on page 3 of the present Office Action. Specifically, with respect to claim 1, the Examiner alleges:

> In claim 1, at lines 3-4, "micro-vibration having a higher frequency than a response frequency" is indefinite because it is unclear what constitutes the response frequency". Though this term is mentioned

> in the specification, it has not been defined. Since the "response frequency" is undefined, one cannot know what frequency would be "higher" than the response frequency. Therefore, it is impossible to determine the frequency level defined by the claim.

Also, in the *Response to Arguments* section, the Examiner appears to not acknowledge the definition of "response frequency" provided in the previous Amendment since it was "not found in original disclosure." *See page 5 of Office Action.* In response, Applicant submits that "response frequency" is mentioned throughout the specification, as the Examiner acknowledges, and submits that the definition of "response frequency" provided in the previous Amendment is well known in the art, and should be considered even if it was not included in the original disclosure.

Further, Applicant submits, as can be drawn from the description in last paragraph of page 2 of the specification under "Background of the Invention", no matter how friction control is performed based on output of the yaw rate sensor, it is a well known fact that a large-mass of the vehicle body will produce a delay in response and thus the control action will bring the control of the vehicle to an unstable state. Accordingly, it is very obvious for a skilled person that "the response frequency of a vehicle" is the frequency that is available for vehicle control, and is used to determine how to control the running state of the vehicle when turning, applying the brakes or driving the vehicle, through controlling the ABS and brake system, or controlling the engine speed and the torque.

Also, as an aside, Applicant submits that effective yaw rate frequency of a yaw rate that is improved by means of active suspension control using a hydraulic cylinder or an accumulator

is several Hz. So the "response frequency of the vehicle body" can be considered to fall in the range of up to 10Hz.

With respect to claim 7, Applicant amends this claim, as set forth herein, and believes that this amendment obviates the Examiner's rejection of claim 7 under 35 U.S.C. § 112, second paragraph.

Also, with respect to claim 7, the Examiner alleges that in claim 7, at lines 4-5, "minimize a rolling resistance of the tire caused by friction between the tire and the surface of a road" is inaccurate. Applicant submits, contrary to the Examiner's assertion, that the above-quoted limitation of claim 7 is NOT inaccurate, at least based on the fact that these features of claim 7 are described in the seventh aspect of the present invention, as described on page 5, third full paragraph. *See also page 29, second full paragraph.*

§102(b) Rejections (Baun) - Claims 1, 3, and 7

The Examiner maintains the rejections of claims 1, 3, and 7, for essentially the same reasons set forth in the previous Office Action. Further, the Examiner adds a new argument in the *Response to Arguments* section of the Office Action. Specifically, the Examiner states, in the *Response to Arguments* section:

> Applicant argues that Baun fails to teach applying vibration at a frequency higher than a response frequency. The examiner disagrees. Since Baun teaches a high frequency vibration, and since the "response frequency" is undefined, the vibration of Baun is inherently higher than some "response frequency" (e.g., a response frequency caused by road irregularities having a low amplitude and a low frequency).

In response, with respect to claim 1, Applicant submits that Baun does not teach or suggest at least "applying vibration to a tire to change friction force between the tire and the surface of a road so as to control the running state of a vehicle wherein the vibration is micro-vibration having a higher frequency than a response frequency of the vehicle," as recited in claim 1. That is, BAUN discloses an invention related to enhancing reduction of brake stopping distance and the increase of starting torque, thus improving the grip performance of the tire by increasing contact pressure between the respective tires and a road surface through application of vibration in longitudinal direction having intermediate or higher frequency to respective tires.

Referring to Figs. 3 and 4 of BAUN, a force in longitudinal direction is acted on to the wheel suspended at the suspension arm through the piston (Taktgeber) driven by the air pump or the hydraulic pump (Pompe) and thus the wheels are pushed down to the road surface side thereby the contact pressure of the tires are increased. However, BAUN does not specify the frequency range of the vibration, but only tangentially refers to intermediate or higher frequency. According to Baun, it appears to be possible to produce frequency of several Hz, up to at the most around 10Hz, as long as the invention of Baun is adapted to employ the Pompe and the Taktgeber for applying vibration to the wheel. Thus, Baun focuses on employing the Pompe and the Taktgeber, but does not specifically teach or suggest at least "applying vibration to a tire to change friction force between the tire and the surface of a road so as to control the running state of a vehicle wherein the vibration is micro-vibration having a higher frequency than a response frequency of the vehicle," as recited in claim 1.

Therefore, no matter how a force in a longitudinal direction is exerted to the wheel, when the frequency of the applied vibration is lower than the response frequency of the vehicle body,

the vibration having foregoing frequency can not suppress the deformation of the tire caused by input having higher frequency than the response frequency of the vehicle body. That is, since the force generated by the tire is determined by friction force between the tire and road surface and the deformation of the tire, Baun can not control the force generated by the tire caused by the input having the frequency higher than the response frequency of the vehicle body.

Yet further, Applicant submits that in BAUN, the response characteristics of the tire is-not taken into account at all. In contrast, the present invention is adapted to control the frictional force between the tire and surface of a road through application of the micro-vibration having the frequency higher than the response frequency of the vehicle body, and as a result the running performance and the safety of the vehicle can be greatly enhanced.

Therefore, at least based on the foregoing, Applicant submits that the present invention, as recited in claim 1, is patentably distinguishable over Baun. Applicant submits that dependent claims 3 and 7 are patentable at least by virtue of their dependency from independent claim 1.

§103(a) Rejections (Baun) - Claims 4-6

The Examiner rejects claims 4-6 over Baun for the same reasons set forth in the previous Office Action, but does not respond to the arguments submitted in the previous Amendment.

In response, first, Applicant submits that dependent claims 4-6 are patentable at least by virtue of their dependency from claim 1.

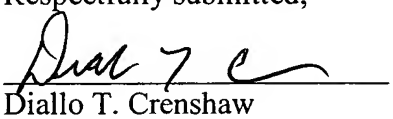
Further, Applicant maintains that the Examiner has not established where Baun discloses any value of amplitude and frequency of a vibration, let alone a range of values for frequency and amplitude. Thus, Applicant maintains that the ranges set forth in each of claims 4-6 are not

obvious and the Examiner's reasoning is merely a result of impermissible hindsight reasoning, upon viewing the applicants invention.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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